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SCIENCE 7

Module

1

Interactions and Ecosystems

**Home Instructor's Guide
and
Assignment Booklet 1A**



Learning
Technologies
Branch

Alberta
LEARNING

Science 7
Module 1: Interactions and Ecosystems
Home Instructor's Guide and Assignment Booklet 1A
Learning Technologies Branch
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The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



You may find the following Internet sites useful:

- Alberta Learning, <http://www.learning.gov.ab.ca>
- Learning Technologies Branch, <http://www.learning.gov.ab.ca/lfb>
- Learning Resources Centre, <http://www.lrc.learning.gov.ab.ca>

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

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About Science 7

Overview of the Science Program

To promote scientific literacy, the science program is designed to

- encourage students at all grade levels to develop a critical sense of wonder and curiosity about scientific and technological endeavours
- enable students to use science and technology to acquire new knowledge and solve problems so they may improve the quality of their own lives and the lives of others
- prepare students to critically address science-related, societal, economical, ethical, and environmental issues
- provide students with a foundation in science that creates opportunities for them to pursue progressively higher levels of study, prepares them for science-related occupations, and engages them in science-related hobbies appropriate to their interests and abilities
- enable students of varying aptitudes and interests to develop a knowledge of the wide spectrum of careers related to science, technology, and the environment

The science program presents science in meaningful contexts—providing opportunities for students to explore the process of science, its applications and implications, and to examine related technological problems and issues. By doing so, students become aware of the role of science in responding to social and cultural change and in meeting needs for a sustainable environment, economy, and society.

The science program incorporates the views that

- in science, as in other areas, communication skills are essential at every stage where ideas are being developed, tested, interpreted, debated, and agreed upon
- teamwork skills are important, since the development and application of science ideas is a collaborative process both in society and among students working on science

The junior high science program is comprised of modules—five at each grade level. Each grade level includes modules from life science, physical science, and Earth/space science.

Fundamental to the science program is a concern for students understanding the scope and character of science, its connections to technology, and the social context in which it is developed. Reflecting this concern, the program identifies one of the following emphases (and skill sets) for each module:

- **Nature of Science Emphasis:** focuses on the processes by which scientific knowledge is developed and tested and on the nature of the scientific knowledge itself

The associated skills are the skills of scientific inquiry.

- **Science and Technology Emphasis:** focuses on solutions to practical problems by developing and testing prototypes, products, and techniques to meet a given need

The associated skills are those of problem solving in combination with the skills of scientific inquiry.

- **Social and Environmental Emphasis:** focuses on issues and decisions relating to how science and technology are applied

The associated skills are the use of research and inquiry skills to inform the decision-making process, seeking and analyzing information, and considering a variety of perspectives.

For more information regarding the science program, refer to the Science Program of Studies document at the following Alberta Learning website:

http://www.learning.gov.ab.ca/k_12/curriculum/bySubject

Once there, click on “Science” and then on the appropriate course name.

Overview of Science 7

Science 7 consists of five modules.

Module	Emphasis	Key Concepts of Subject Matter
1 Interactions and Ecosystems	Social and Environmental	interactions and interdependencies; environmental monitoring; environmental impacts; producers, consumers, and decomposers; nutrient cycles and energy flow; species distribution; succession; endangered species; extinction; environmental management
2 Plants for Food and Fibre	Science and Technology	needs and uses of plants; plant propagation and reproduction; life processes and structure of plants; fertilizers and soil nutrients; chemical and biological controls; plant varieties; selective breeding; monocultures; resource management; sustainability
3 Heat and Temperature	Social and Environmental	heat energy needs and technologies; thermal energy (heat energy); particle model of matter; temperature; thermal expansion; change of state; heat transfer; insulation and thermal conductivity; thermal energy sources; energy conservation
4 Structures and Forces	Science and Technology	structural forms; material strength and stiffness; joints; forces on and within structures (loads and stresses); direction of forces; deformation; structural stability; modes of failure; performance requirements; margin of safety
5 Planet Earth	Nature of Science	strata; rocks and minerals; rock cycle (formation of igneous rock, metamorphism, and sedimentary processes); mountain formation (folding and faulting); crustal movement/plate tectonics; geological time scale; fossil formation; weathering and erosion; sudden and gradual/incremental change; development of models based on observation and evidence

Structure of the Learning Package

Basic Design

This learning package consists of

- Student Module Booklets (five)
- Home Instructor's Guides and Assignment Booklets (two or three per module)

The document you are presently reading is the Home Instructor's Guide.

A survey of the learning package components will show that the course is divided into clumps of learning called modules. These modules correspond to basic elements of the science program.

For each module there are two print components: a Student Module Booklet and a set of Home Instructor's Guides and Assignment Booklets.

Student Module Booklets

Contents
Overview Assessment
Section 1 Lesson 1 Lesson 2 etc.
Section 2 Lesson 1 Lesson 2 etc.
Section 3 Lesson 1 Lesson 2 etc.
Module Summary
Appendix

Student Module Booklets contain guided lessons that instruct students in a relevant, realistic setting. These booklets have been specially designed to promote such qualities in the learner as autonomy, independence, and flexibility. Writers have incorporated such teaching strategies as working from the concrete to the abstract, linking the old to the new, getting students actively involved, and using advance, intermediate, and post organizers. Many other techniques are used to cater to individual learning styles and preferences. The materials have been designed to include a variety of pathways and options because they are intended for a broad range of use within and beyond Alberta.

The structure of the Student Module Booklets follows a systematic design. Each booklet begins with a detailed table of contents that shows the students all of the main steps; this page acts as an organizer for students. The Overview introduces the module content and includes a graphic representation to help visual learners and poor readers. This introduction also includes an assessment statement, where students are informed of the weightings of each assignment.

The body of the Student Module Booklet is made up of two or three sections. Each section consists of related lessons that develop concepts, skills, and attitudes of the module. The lessons may include print, library, computer, or Internet involvement. Each Student Module Booklet also includes "Going Further" items as optional enrichment opportunities. At times, more than one pathway is provided to allow a choice based on the materials and equipment available. This flexibility caters to each student's personal situation.

Following the last section is a modular summary that focuses on the skills and strategies that the student has learned. The Student Module Booklet ends with an Appendix that includes a Glossary and Suggested Answers for selected self-assessment questions posed in the module. Answers for the other questions posed in the module are provided in the Home Instructor's Guide.

Home Instructor's Guides and Assignment Booklets

Accompanying each Student Module Booklet is a set of Home Instructor's Guides and Assignment Booklets.

Each Home Instructor's Guide contains answers to questions posed in the Student Module Booklet that are to be checked with the help of the teacher or home instructor. Having the answers in the Home Instructor's Guide allows the teacher or home instructor to play an important role in monitoring the student's work and to assist in pacing.

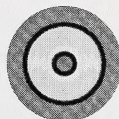
The home instructor should assist the student in setting up his or her work area and in understanding what the student needs to do.

There are a number of things to consider when choosing a place for the student to work. The most significant physical need will be enough space to lay out all of the materials needed at one time. At some times, the Student Module Booklet, the Assignment Booklet, the textbook, and the notebook may all be needed at the same time. This can require a fair amount of space. You should also consider lighting and other comfort factors, like a good chair. Try to keep the number of distractions in the working area at a minimum. Working at learning is a hard task. The fewer things that interfere, the better.

These materials were developed to be used sequentially. The student should begin at the start of each Student Module Booklet and work his or her way through them step by step. Many students are tempted to skip some of the work by going directly to the Assignment Booklets. This would leave them without many significant learning experiences. Some students also use the Appendix answers inappropriately. These answers are given to allow a student to compare his or her work with a suitable answer. It is important for the student to answer the questions first, then compare them with the Appendix answers. This makes the student an active participant in his or her learning.

The student needs to be reminded to keep his or her notebook neat and orderly. The student should be using it to record the answers to questions from the Student Module Booklets and to save the work done in experiments and other activities. The notebook will become a good resource when it is time to study for the final exam.

Media



CD



Internet

Throughout this course, there are references to the *Science 7 Multimedia CD*, which accompanies Module 1. This CD consists of video segments designed to help the student better understand particular concepts presented in this course.

Internet references are found throughout the Student Module Booklets. These references are optional, but the student should be encouraged to explore them. In some cases, the student is given suggested topics he or she may explore through any of the Internet's search engines.

In other cases, the student is referred to the following website maintained by McGraw-Hill Ryerson, the publisher of the textbook used for this course.

<http://www.school.mcgrawhill.ca/resources>

In rare cases, the student might be given a specific uniform resource locator (URL), but he or she should be aware that such addresses are subject to change.

Updated information about the Learning Technologies Branch and this course, as well as other courses, can be found by visiting the Learning Technologies Branch's website.

<http://www.learning.gov.ab.ca/ltb>

There are some occasions in this course that require the student to use a library or the Internet for research purposes. Arrangements should be made with a local library for student access.

Textbook



ScienceFocus7, published by McGraw-Hill Ryerson Limited, 2001

Materials and Apparatus

A list of materials and apparatus needed to complete each module is given on page 10 of each Student Module Booklet. These materials and apparatus are also listed in the information specific to each module given later in this document. In planning ahead for your role, you will find it useful to preview these lists.

For an appreciation of the context in which the materials and apparatus are to be used, scan the activities and investigations in the lessons of the Student Module Booklets and on the referenced pages in the textbook. Any materials or apparatus needed for the optional "Going Further" items throughout the Student Module Booklet are not included in these lists.

If the student doesn't have access to a school lab, you will need to contact the teacher to arrange availability of the following:

- 100 mL bromthymol blue indicator
- 100 mL plaster of Paris
- 1 eyedropper
- 1, 100-mL graduated cylinder
- 1.5 m thin copper wire
- 1 magnifying glass
- 1 small piece of rigid copper wire
- 1, 10-N spring scale
- 1 thermometer
- 1 pair of safety goggles



Safety goggles and rubber gloves are generally advised when doing activities or investigations involving the manipulation of apparatus and materials.

Module 1: Interactions and Ecosystems

The major emphasis of this module is **Social and Environmental**. There is a focus on issues and decisions relating to how science and technology are applied.

Ecosystems develop and are maintained by natural processes and are affected by human action. To foster an understanding of ecosystems, this module develops student awareness of an ecosystem, its components and interactions, as well as natural cycles and processes of change. Building on this knowledge, students investigate human impacts and engage in studies that involve environmental monitoring and research. By reflecting on their findings, students become aware of intended and unintended consequences of human activity and recognize the need for responsible decision making and actions.

Section 1

Living Things and Their Surroundings

Section 2

The Flow of Energy and Matter

Section 3

Watching Changes in Ecosystems

Key Concepts

The following concepts are developed in this module and may also be addressed at other grade levels.

- interactions and interdependencies
- environmental monitoring
- environmental impacts
- producers, consumers, decomposers
- nutrient cycles and energy flow
- species distribution
- succession
- endangered species
- extinction
- environmental management

Assessment

In this module, students are expected to complete three section assignments and a final module assignment. Their grading in this module is based on the assignments they submit. The mark distribution is as follows:

Assignment Booklet 1A	
Section 1 Assignment	40 marks
Assignment Booklet 1B	
Section 2 Assignment	56 marks
Assignment Booklet 1C	
Section 3 Assignment	35 marks
Final Module Assignment	<u>53 marks</u>
TOTAL	184 marks

Section 1: Living Things and Their Surroundings

In this section, a strong emphasis is placed on the need for personal knowledge and awareness of the natural environment and human impact on the environment. The interactions that create an ecosystem are studied. Students then consider the increasing conflict between the needs of wildlife and the expanding wants and needs of themselves and other people. Students also become aware that they have the power and responsibility to reduce their impact on the local and global environment.

The following materials will be needed to complete this section.

Section 1: Lesson 1

- a variety of construction or drawing materials for creating a creature

Section 1: Lesson 2

- 2 large baking pans (one made from aluminum foil)
- scissors
- modelling clay
- 250-mL measuring cup
- clock that displays seconds
- graduated cylinder (or measuring spoons)
- 3–5 small sponges
- food colouring

Section 1: Lesson 3

- coloured markers (e.g., bingo chips and buttons)
- large sheet of paper (Tape or glue several sheets together.)

Suggested Answers

Section 1: Lesson 1

4.

Basic Needs of All Living Things	
Basic Need	Reason(s) Why It Is Necessary to All Living Things
food	Food gives living things energy. It also provides nutrients required for growth and reproduction.
water	All living things are made up of water. So, they need water to survive.
suitable habitat	Organisms need a particular habitat that provides their needs for survival.
gaseous exchange	All organisms, plants included, take in oxygen and release carbon dioxide and water during respiration (the conversion of food into energy). Plants also take in carbon dioxide from the air to produce glucose during photosynthesis (the conversion of energy into food).

8. The student should be able to tell you how the organism obtains food and water, how it moves, where or how it shelters itself, and how it exchanges gases with the atmosphere. (Remember, the air contains poisonous gases.) Their creature should meet all adaptation criteria given in the Student Module Booklet. Further creative ideas and additions are desirable.

9. An *ecosystem* is the interactions between living and non-living things in a particular environment.

A *population* is a group of individuals of the same species living in a particular area.

A *community* consists of populations of different, interdependent species interacting within a particular habitat.

10. *Mutualism* is a symbiotic relationship between two different types of organisms in which both organisms benefit from the partnership.

Parasitism is a symbiotic relationship between two different types of organisms in which one of the organisms is harmed and the other benefits.

Commensalism is a symbiotic relationship between two different types of organisms in which one of the organisms benefits and the other neither benefits nor is harmed.

11.

Identifying and Describing Symbiotic Relationships		
Organisms Involved	Description of Relationship	Type of Symbiotic Relationship
remora and shark	Remora eat bacteria and micro-organisms unhealthy for sharks.	mutualism
ants and aphids	Ants protect aphids from predators and feed on the nectar that aphids secrete.	mutualism
tapeworms and people	Tapeworms absorb the nutrients from the food in a person's small intestine. People do not get the nutrients that they need from the food.	parasitism
orchids and tree trunks	Orchids benefit from having a safe place and from the constant supply of water. The trees appear not to be harmed by the presence of the orchids.	commensalism

12. The plus symbol means the organism benefits; the minus symbol means the organism is harmed; and the zero symbol means the organism neither benefits nor is harmed. Note that the use of these symbols with the name provides an excellent memory clue.

mutualism (+ +): The relationship is positive (beneficial) for both organisms involved.

parasitism (+ -): One organism benefits, while the other is harmed.

commensalism (+ 0): One organism benefits, while the other organism neither benefits nor is harmed.

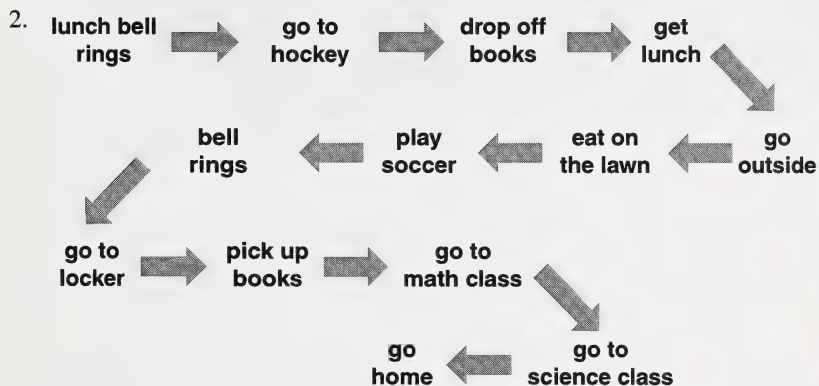
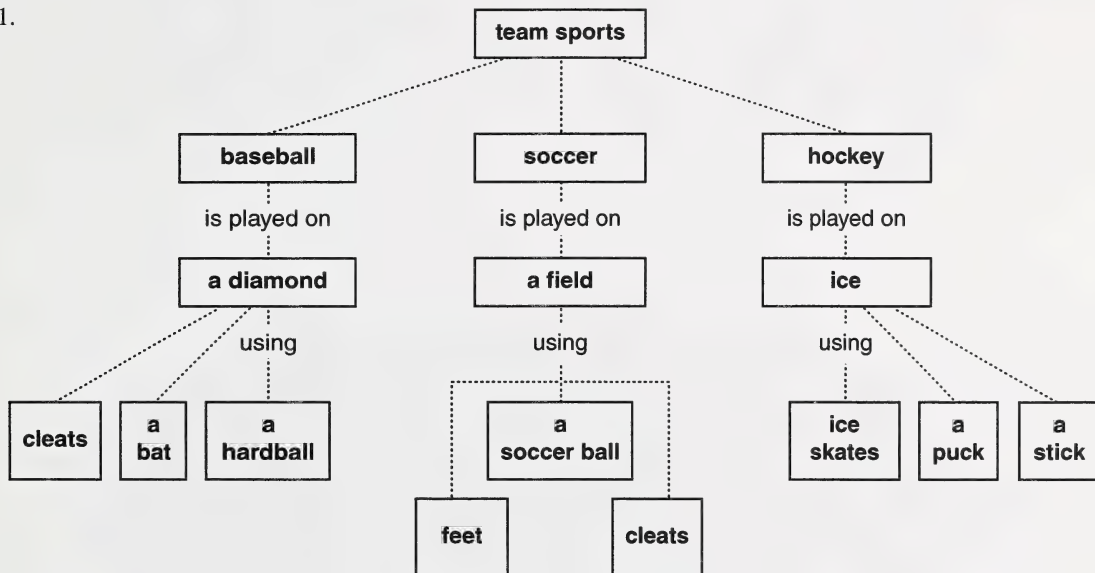
Section 1: Lesson 2

3. a. Answers will vary. Items that are needs are required for survival. Needs might include food, water, shelter (clothing and buildings), and air. Wants are luxuries that make life more comfortable and are often more enjoyable. Wants might include a skateboard, computer, designer jeans, and a new shirt. Although food is a basic need, ice cream is a luxury. While clothing is a basic need, trendy designs, colours, and fabrics that are not made locally are a luxury. Water is a basic need, having such easy access to clean water is a luxury. (It is not enjoyed by many people in the world.)
- b. A *need* is something that is required for survival. A *want* is everything else.

6. Textbook questions 1 to 5 of "Instant Practice," p. 448

For questions 1 to 5, graphic organizers may vary. Sample organizers are given.

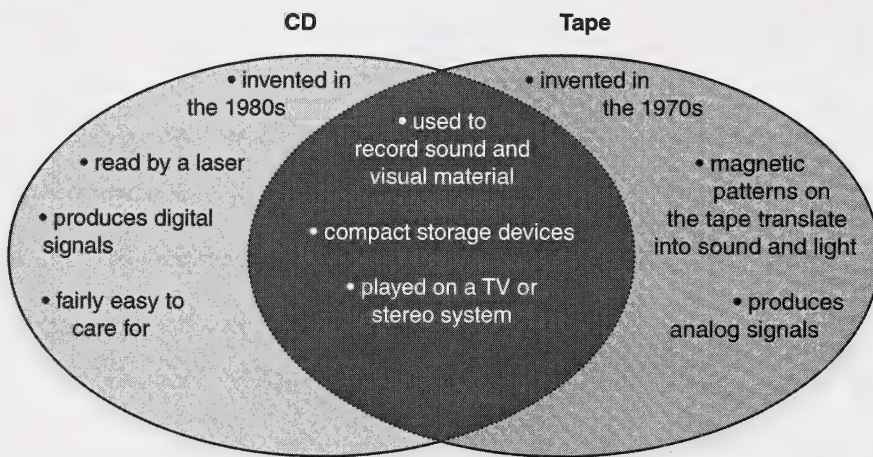
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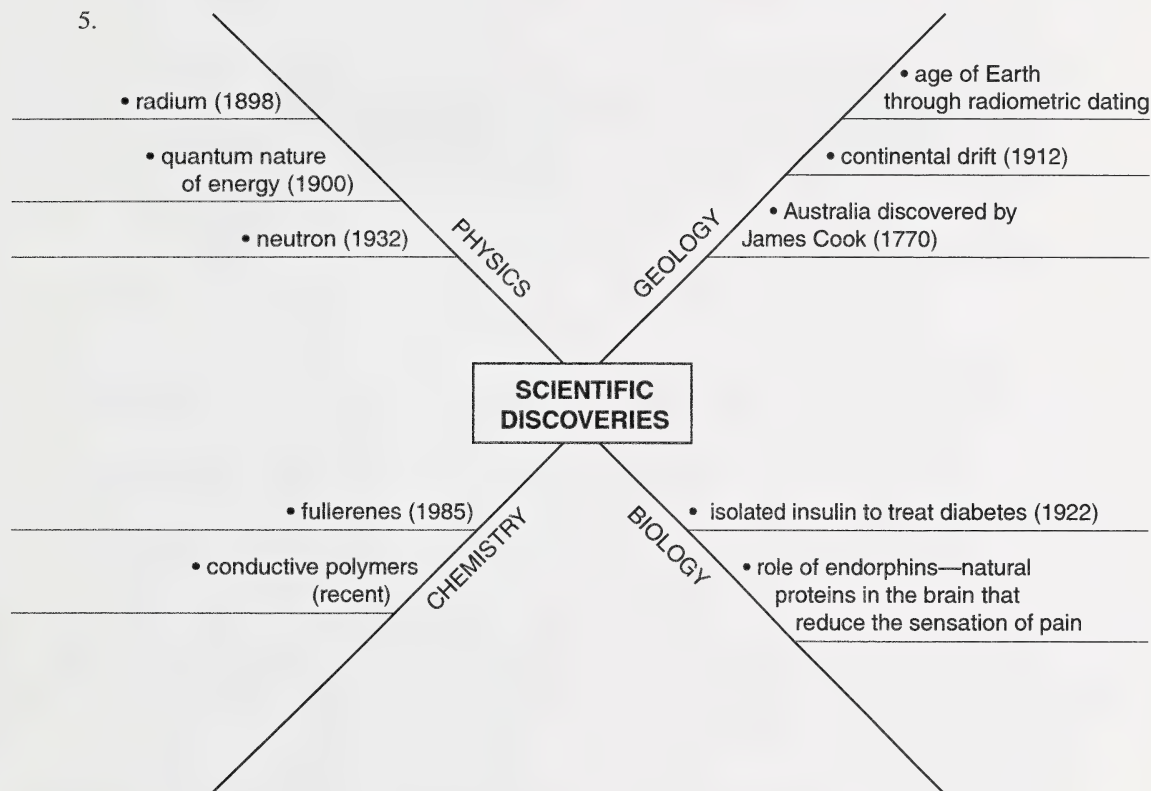


3.



4.





7. DDT was widely used as a pesticide. Though it was very effective at killing pests, it had several very negative and unpredicted side effects. It caused the eggshells of many birds to become so thin that the chicks did not survive.
8. Predators help keep the population of prey species within a healthy range for their habitat. They remove the organisms that are the least likely to survive (old, young, weak, sick, injured, or poorly adapted). Human interference disrupts these natural checks and balances.
10. **Textbook questions 1 to 5 of “Topic 2 Review,” p. 28**
 1. Answers will vary. A sample answer is given.

Natural resources are materials that come from the natural world. Water and wood are examples of natural resources. Water is used for drinking, bathing, washing, and so on; wood is used to build homes, furniture, and so on.

2. Answers will vary.

Activity	Impact on the Environment	Positive or Negative Impact?	Alternative Action to Lessen Negative Impact
using plastic bags in your lunch	produces garbage that must be disposed of in landfill sites	negative	using reusable containers for sandwiches and so on
mowing your lawn and putting the grass clippings in the garbage	produces garbage that must be disposed of in landfill sites	negative	composting grass clippings or leaving them on the lawn
using the car to get to nearby locations	creates pollution and uses non-renewable, natural resources	negative	riding your bicycle

3. Answers will vary. Activities performed in a typical day might include eating, going to school, taking music lessons, swimming, and going out to eat. Impacts on the environment might be positive or negative. Activities described as needs should meet one of the basic needs outlined in the chapter—food, water, air to breathe, and a suitable habitat.
4. Answers will vary. Native plants might include birch, black spruce, white spruce, lodgepole pine, larch, and prickly rose. (Pictures can be found in the textbook and may help in giving a description.)
5. Answers will vary depending on the animal chosen. Description of habitat needs should include a habitat that would provide food, clean water and air, and shelter for the animal.

Section 1: Lesson 3

7. Textbook questions 1, 2, and 3 of “What Did You Find Out?,” p. 32

- Based on the number of chips collected, the fast-food meal produces the largest ecological footprint, followed by the sandwich with the store-bought ingredients and the sandwich with the home-made ingredients. This is because there are so many steps (processing, packaging, storage, transportation) that require energy and produce waste.
- A vegetarian meal would have a smaller ecological footprint because the energy used to produce and process the beef is not required. One whole section of the chart would not be required. Also, you will find, in the next lesson, that more than 60% of the energy the cow receives from the plants it eats is used or wasted by the cow. Direct consumption of plants and plant products avoids this waste.

3. Answers will vary. You could reduce the ecological cost of your food in the following ways:

- Try to buy food with less packaging because packaging requires energy and produces wastes.
- Eat the occasional vegetarian meal because they are more “energy efficient.”
- Reduce the amount of meat you consume.
- Buy local food.
- Buy organic food.
- Buy food in bulk because bulk food has less packaging and produces less waste.

Section 1 Review

1. Textbook question 1 of “Reviewing Key Terms,” p. 37

1. **adaptation:** an inherited characteristic that helps an organism survive in its environment

ecological footprint: the total area that would be needed to provide the natural resources used by an individual

ecologist: a scientist who studies interactions occurring in the environment

symbiosis: a long-lasting relationship between two organisms

natural resources: materials and products found in nature and used to meet humans’ wants and needs

sustainability: using resources no more quickly than they can be renewed and discharging wastes no more quickly than they can be absorbed

parasitism: a relationship between two organisms in which one organism benefits and the other organism is harmed

ecosystem: all of the interacting living and non-living parts in an area

2. Textbook questions 2 to 6 of “Understanding Key Concepts,” p. 37

2. Answers will vary. Sample answers are given.

dogs: receive food, shelter, and clean water from humans

butterflies: eat nectar from flowers; drink water from natural water bodies, dew, and puddles; and receive shelter in the plants in flower beds

flowers: absorb water and nutrients from the soil and energy from the Sun, and receive shelter from the trees and terrain around them

3. Answers will vary. There are many adaptations illustrated in the picture. Some examples are given.
- The wings on birds and butterflies allow them to move to gather food and water.
 - The legs on beetles and humans allow them to move to gather food and water.
 - Flower colour attracts insects and birds to distribute pollen.
 - Plant roots allow plants to absorb water and nutrients required for growth.
 - The beaks on birds are specialized to obtain specific food.
 - The claws on squirrels allow them to climb trees with ease.
 - The hair on dogs provides warmth.
4. An ecosystem is a complex set of interactions between the living and non-living parts of an area. Ecosystems in the picture could include the soil, the garden, and the entire park.
5. Technologies that humans use every day include the following:
- furnaces (for heating our homes)
- Furnaces use electricity or natural gas, both of which must be produced from natural resources. In Canada, heat is a need that impacts the environment.
- cars or planes (to transport people and goods)
- Both use natural resources and produce pollution as they work, creating an impact on the environment.
- water pumps
- They use electricity or some other energy source that is produced from natural resources. Water is a basic need; getting it to people impacts the environment.
6. Here are two examples of how aboriginal people living in Canada 200 years ago had much less impact on their environment than you do today.
- Aboriginals 200 years ago constructed clothing and shelter with materials available locally, like animal hides and wood. Today, you buy items produced far away, like in China.
 - Aboriginals 200 years ago ate fresh foods that they either hunted or gathered. Today, you buy food distributed by a local grocery store.

ASSIGNMENT BOOKLET 1A

Science 7

Module 1: Section 1 Assignment

Home Instructor's and Student's Comments:

STUDENT FILE NUMBER
(if label is missing or incorrect)

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for
correct course and module.*

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.
2. All faxing costs are the responsibility of the sender.

E-MAILING

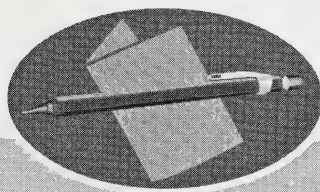
Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Science 7

Module 1

Interactions and Ecosystems

ASSIGNMENT BOOKLET 1A



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FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	40	

Teacher's Comments

Science 7
Module 1: Interactions and Ecosystems
Assignment Booklet 1A
Learning Technologies Branch

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
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**ASSIGNMENT BOOKLET 1A
SCIENCE 7: MODULE 1
SECTION 1 ASSIGNMENT**

Your mark for this module will be determined in part by how well you do your assignments.

This Assignment Booklet is worth 40 marks out of the total 184 marks for the assignments in Module 1. The value of each assignment and each question is stated in the left margin.

Work slowly and carefully. If you have difficulty, go back and review the appropriate topic.

Be sure to proofread your answers carefully.

40

Section 1 Assignment: Living Things and Their Surroundings

Read all parts of your assignment carefully and record your answers in the appropriate places.

2

1. Two types of adaptations were discussed in Lesson 1. They were _____ adaptations and _____ adaptations.

2. List two adaptations of a fish. Explain how each adaptation helps the fish survive.

2

Adaptation 1: _____

2

Adaptation 2: _____

4

3. Imagine you have been invited on an expedition to climb to the top of Mount Everest. You will be at the top of the world's highest mountain with a group of experienced climbers. The following is a list of some items you will be taking with you. Match them to the four basic needs. One has been done as an example.

- bottled water
 - chocolate bar
 - decongestant
 - dried soup
 - oxygen canister
- parka
 - peanuts
 - scarf to keep lungs warm
 - stove for melting snow
 - tent

Basic Need	Item Helping to Meet the Need
food	chocolate bar,
water	
suitable habitat	
gaseous exchange	

Return to page 22 of the Student Module Booklet and begin Lesson 2.

4

4. Your actions can have an effect on the environment. The effect can be positive or negative. Mark each of these actions as either positive or negative. Place a **P** on the line if the action is positive. Place an **N** on the line if the action is negative.

- Get a ride to the library in the family car rather than walking.
- Choose products with less packaging.
- Clean up garbage in the schoolyard.
- Eat food with a lot of packaging.
- Litter.
- Recycle.
- Ride your bike to soccer practice rather than getting a ride in a car.
- Waste water in the shower.

Return to page 29 of the Student Module Booklet and begin Lesson 3.

5. Each of the following situations represents one of the four Rs. Identify which R is represented by each situation.

- ① a. Alex takes his cardboard and newspaper to the local green box. He'd rather do this than throw them out.
-
- ① b. Sandra packs her lunch in a cloth lunch bag.
-
- ① c. A large Alberta company burns its waste. It uses the heat to generate electricity.
-
- ① d. Sundeep doesn't buy individual packages of potato chips. She buys a large bag of chips and puts them in separate containers for snacks.
-

6. Imagine you have a pet dog or cat.

- ② a. List one of its needs and one of its wants.
-
-
- ② b. Give two specific examples of how your needs and wants could conflict with your pet's needs.
-
-

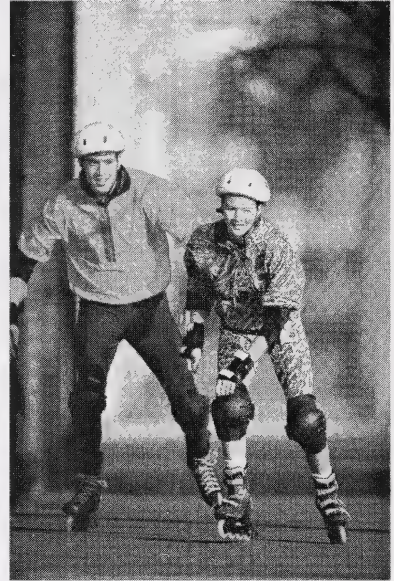
7. Which picture illustrates a larger ecological footprint? Explain your reasoning. Be specific.

Situation A



PHOTODISC COLLECTION/GETTY IMAGES

Situation B



PHOTODISC COLLECTION/GETTY IMAGES

①

Footprint comparison: _____

②

Reasoning: _____

8. Ned wanted to challenge his family to reduce the amount of waste they created in a week. However, before he began the challenge, he wanted to see just how much waste they create. So, Ned kept track of the number and types of waste they created over one week. The data he collected is shown in the following table:

Counting Waste Over 1 Week								
Type of Waste	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total
Newspapers	1	1	1	1	1	1	1	7
Food wastes	3	7	4	3	9	4	3	33
Cardboard	2	0	4	3	0	0	3	12
Plastic	2	1	1	2	2	1	1	10
Glass	1	2	2	1	2	2	1	11
Cans	3	5	2	2	15	6	8	41

①

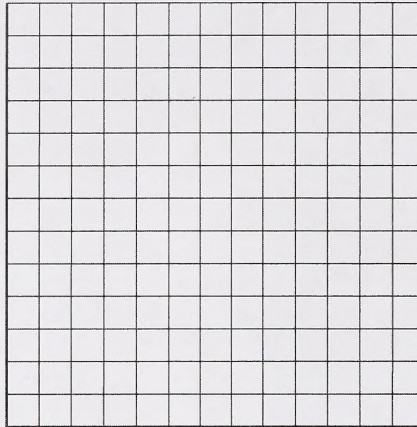
- a. Is Ned collecting qualitative or quantitative data?

②

- b. Ned counted the number of times an item was thrown away. Suggest a more accurate and meaningful way he could have quantified his data.

⑥

- c. Use the data to create a bar graph showing the total amount of each type of garbage created for this week. Be sure to meet all the appropriate criteria. (Refer to pages 477 and 478 in the textbook.)



9. Classify each of the following descriptions. Use one or more of the scientific terms from the following list. (You should use more than one term for some of the descriptions.)

- commensalism
- ecological footprint
- ecologist
- ecology
- natural resources
- niche
- parasitism
- population
- sustainability

①

- a. Liver flukes live in the liver of deer and moose. They absorb nutrients and water from the animal's blood. As they grow and multiply, they can destroy so much of the liver that the animal dies.

①

- b. According to last year's survey, it was estimated that 42 wood frogs live in and around that pond.

- ① c. A scientist was doing a study of the mountain goat in its natural habitat. She was trying to discover many things. What do they eat? How are they affected by the seasons? What predators and scavengers use them as a source of food? Do any other species compete with them for food or space?
-
- ① d. The pioneers lived off the land using the fish, berries, and wood they gathered from the area around their home. They worried that there might not be enough of these things to go around as more people moved into the area.
-
- ① e. As the elk moved through the grass, they were followed by a small flock of birds (as they so often are). The birds were busy catching and eating the insects stirred up by the elk's movements.
-
- ① f. Ivan has a simple lifestyle. His cousin Boris's lifestyle is more complex. Ivan figures Boris needs twice as much land and energy to support his lifestyle.
-

Submit Assignment Booklet 1A to your teacher for assessment.
Then turn to page 37 of the Student Module Booklet and begin Section 2.

ASSIGNMENT BOOKLET DECLARATIONS

The Student's Declaration is to be signed by a student registered at the Alberta Distance Learning Centre. If the student is under 16, the Supervisor's Declaration is to be signed by the student's supervisor, who is usually a home instructor, teacher, or home-schooling coordinator. Failure to complete this page may invalidate the assignment results.

STUDENT'S DECLARATION

- I have followed the instructions outlined in the Student Module Booklet.
- I have completed the activities to prepare myself for the assignments in this Assignment Booklet.
- I completed the assignments in this Assignment Booklet by myself.

Student's Signature

SUPERVISOR'S DECLARATION

I hereby certify that I have supervised the learning activities completed by _____.
Student's Name

I also certify that to the best of my knowledge the assignments in this Assignment Booklet were completed independently by this student.

Supervisor's Signature

If you, the student or supervisor, have any comments or observations regarding this module, write them in the following space.
